

IN THE CLAIMS

Please amend the claims as follows:

1-3. (Canceled)

4. (Previously Presented) The coating composition of claim 26 further comprising one or more amino acids.

5. (Canceled)

6. (Previously Presented) The coating composition of claim 26 further comprising one or more rare earth compounds.

7- 13. (Canceled)

14. (Previously Presented) The coating composition of claim 26 wherein at least one of the one or more corrosion-inhibiting carbon pigments is an amorphous form of carbon.

15. (Canceled)

16. (Previously Presented) The coating composition of claim 26 wherein the one or more corrosion-inhibiting carbon pigments are present in the composition in a weight percent range of between about 0.1 to about 100% of total pigment concentration.

17. (Previously Presented) The coating composition of claim 26 wherein the coating composition has a pigment volume concentration of between about 5 to about 55.

18. (Previously Presented) The coating composition of claim 26 wherein at least one of the one or more binders is an organic binder.

19. (Previously Presented) The coating composition of claim 26 wherein at least one of the one or more binders is an epoxy-based resin binder.

20. (Previously Presented) The coating composition of claim 19 wherein the epoxy-based resin binder is an amine-cured epoxy-based resin binder.

21-25. (Canceled)

26. (Currently Amended) A non-chromate containing coating composition comprising:
one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount;
one or more rare earth compounds;
one or more substantially insoluble inorganic extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; and
one or more binders;
wherein at least one of the one or more inorganic extenders is calcium sulfate, calcium hydrogen sulfate, calcium phosphate, calcium hydrogen phosphate, calcium di-hydrogen phosphate or combinations thereof; and
wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

27. (Previously Presented) The coating composition of claim 26 wherein the one or more inorganic extenders are present in the composition in a weight percent of between about 45% to about 75% of total pigment concentration.

28. (Previously Presented) The coating composition of claim 26 further comprising one or more corrosion co-inhibitors.

29-37. (Canceled)

38. (Previously Presented) The coating composition of claim 28 further comprising:
one or more corrosion co-inhibitors, wherein at least one of the one or more corrosion co-inhibitors is a rare earth compound.

39. (Currently Amended) A non-chromate containing coating composition comprising:
one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount;
one or more substantially insoluble inorganic extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof;
one or more binders; and
one or more corrosion co-inhibitors,
wherein at least one of the one or more corrosion co-inhibitors is a rare earth compound and wherein the rare earth compound is a salt of a rare earth-containing compound selected from the group consisting of a hydroxide of a rare earth-containing compound, an oxide of a rare earth-containing compound, a solid solution mixed oxide of a rare earth-containing compound, and combinations thereof;
wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

40. (Previously Presented) The coating composition of claim 39 wherein the rare earth compound is selected from the group consisting of cerium oxide, cerium hydroxide, cerium solid solution mixed oxide, cerium oxide mixture, cerium salt, neodymium oxide, neodymium hydroxide, neodymium oxide mixture, neodymium salt, praseodymium oxide, praseodymium hydroxide, praseodymium solid solution mixed oxide, praseodymium oxide mixture, praseodymium salt, ytterbium oxide, ytterbium hydroxide, ytterbium solid solution mixed oxide,

ytterbium oxide mixture, ytterbium salt, yttrium oxide, yttrium hydroxide, yttrium oxide mixture, yttrium salt, terbium oxide, terbium hydroxide, terbium solid solution mixed oxide, terbium oxide mixture, terbium salt, and combinations thereof.

41. (Currently Amended) A non-chromate containing coating composition comprising:

one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount;

one or more substantially insoluble inorganic extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof;

one or more binders; and

one or more corrosion co-inhibitors,

wherein at least one of the one or more corrosion co-inhibitors is a rare earth compound and wherein the rare earth compound is a praseodymium compound selected from the group consisting of a praseodymium solid solution mixed oxide, a praseodymium(III) oxide, a praseodymium(III) hydroxide, a praseodymium(IV) oxide, and combinations thereof; and

wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

42-45. (Canceled)

46. (Previously Presented) The coating composition of claim 38 wherein the one or more inorganic extenders are present in the composition in a weight percent of between about 25% to about 98% of total pigment concentration.

47. (Previously Presented) The coating composition of claim 38 wherein at least one of the one or more binders is an epoxy-based resin binder.

48. (Previously Presented) The coating composition of claim 38 comprising at least two

corrosion co-inhibitors.

49-64. (Canceled)

65. (Previously Presented) The coating system of claim 134 wherein the system further comprises one or more pretreatment coatings applied to the substrate to form a pretreated substrate and a topcoat.

66. (Original) The coating system of claim 65 wherein the topcoat is a urethane topcoat.

67. (Canceled)

68. (Previously Presented) The coating system of claim 134 wherein the coating composition is cured naturally or with an accelerated method of curing which exposes the coating composition to heat, UV energy, microwave energy, or combinations thereof.

69. (Previously Presented) The coating system of claim 134 wherein the substrate is coated by a method of application selected from the group consisting of spraying, brushing, rolling and dipping.

70. (Previously Presented) The coating system of claim 134 wherein the substrate is a composite substrate.

71. (Previously Presented) The coating system of claim 134 wherein the substrate is selected from the group consisting of aluminum, aluminum alloys, steel, galvanized steel, zinc, zinc alloys, magnesium, and magnesium alloys.

72-73. (Canceled)

74. (Previously Presented) The coating system of claim 146 wherein the system further comprises a topcoat.
75. (Original) The coating system of claim 74 wherein the topcoat is a urethane topcoat.
76. (Previously Presented) The coating system of claim 146 wherein at least one of the one or more binders is a resin binder.
77. (Previously Presented) The coating system of claim 146 wherein the coating composition is cured naturally or with an accelerated method of curing which exposes the coating composition to heat, UV energy, microwave energy, or combinations thereof.
78. (Previously Presented) The coating system of claim 146 wherein the pretreated substrate is coated by a method of application selected from the group consisting of spraying, brushing, rolling and dipping.
79. (Previously Presented) The coating system of claim 146 wherein the pretreated substrate is a composite substrate.
- 80-82. (Canceled)
83. (Currently Amended) A non-chromate containing coating system comprising:
one or more pretreatment coatings applied to a substrate to form a pretreated substrate;
a coating composition applied to the pretreated substrate, the composition including:
one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount[.];
one or more binders;
one or more substantially insoluble inorganic extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof;

one or more rare earth compounds; and a topcoat; and

wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

84. (Previously Presented) The coating system of claim 83 wherein at least one of the one or more binders is a resin-binder.

85. (Previously Presented) The coating system of claim 83 wherein the coating composition and the one or more pretreatment coatings are each independently cured naturally or by exposure to heat, UV energy, microwave energy, or combinations thereof.

86. (Previously Presented) The coating system of claim 83 wherein the pretreated substrate is coated by a method of application selected from the group consisting of spraying, brushing, rolling and dipping.

87-88. (Canceled)

89. (Currently Amended) A non-chromate containing coating system comprising:

one or more pretreatment coatings applied to a substrate to form a pretreated substrate;
and

a coating composition including:

one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount;

one or more substantially insoluble inorganic extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; and

one or more binders;

one or more rare earth compounds; and

a topcoat;

wherein the non-chromate containing coating composition is applied to the pretreated substrate and wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

90. (Previously Presented) The coating system of claim 89 wherein the coating composition and the one or more pretreatment coatings are each independently cured naturally or by exposure to heat, UV energy, microwave energy, or combinations thereof.

91. (Previously Presented) The coating system of claim 89 wherein the pretreated substrate is coated by a method of application selected from the group consisting of spraying, brushing, rolling and dipping.

92-94. (Canceled)

95. (Currently Amended) A method of preparing a non-chromate containing coating composition, the method comprising:

preparing a mill base having one or more binders;

adding to the mill base an effective corrosion-inhibiting amount of one or more corrosion-inhibiting carbon pigments, and one or more substantially insoluble extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof, to produce the coating composition; and

adding to the mill base one or more rare earth compounds, and optionally one or more additives, or combinations thereof;

wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

96-112. (Canceled)

113. (Previously Presented) The coating composition of claim 26 wherein the corrosion-inhibiting carbon pigments are present in the composition in a weight percent range of between about 3% to about 25% of total pigment concentration.

114-118. (Canceled)

119. (Currently Amended) A non-chromate containing coating composition comprising:
one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount;

one or more substantially insoluble inorganic extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof;

one or more rare earth compounds; and

one or more binders;

wherein the one or more rare earth compounds is a praseodymium(III) sulfate or a praseodymium(III/IV) oxide;

wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

120. (Canceled).

121-122. (Canceled)

123. (Previously Presented) The coating system of claim 89 wherein at least one of the one or more binders is a resin binder.

124. (Previously Presented) The coating composition of claim 26 further comprising:
one or more rare earth compounds, present in the composition in a weight percent from between about 0.4% to about 26% of total pigment concentration, and wherein

the corrosion-inhibiting carbon pigment is present in the composition in a weight percent from between about 3% to about 25% of total pigment concentration; and the one or more extenders is present in the composition in a weight percent from between about 25% to about 98% of total pigment concentration.

125. (Previously Presented) The coating composition of claim 26 wherein the corrosion-inhibiting carbon pigment is present in the composition in a weight percent of at least about 6% of total pigment concentration.

126. (Previously Presented) The coating composition of claim 26 wherein the effective corrosion-inhibiting amount of the one or more corrosion-inhibiting carbon pigments is an amount which provides the coating composition with at least a 2, 4 A rating on the Keller Corrosion Rating Scale for a 500 hour salt fog test, as tested according to ASTM B117 procedure.

127. (Previously Presented) The coating composition of claim 26 wherein the effective corrosion-inhibiting amount of the corrosion-inhibiting carbon pigment is at least about 6 wt%, and the coating composition has at least a 2, 4 A rating on the Keller Corrosion Rating Scale for a 500 hour salt fog test, as tested according to ASTM B117 procedure.

128-130. (Canceled)

131. (Previously Presented) The coating composition of claim 26 wherein the one or more inorganic extenders are present in the composition in a weight percent of between about 25% to about 98% of total pigment concentration..

132. (Previously Presented) The coating composition of claim 26 wherein the one or more inorganic extenders are present in the composition in a weight percent of between about 80% to about 95% of total pigment concentration.

133. (Previously Presented) The composition of claim 26 wherein the calcium sulfate is hydrous calcium sulfate, anhydrous calcium sulfate or combinations thereof.

134. (Currently Amended) A non-chromate containing coating system comprising:
a coating composition applied to a substrate, the composition including:
one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount;
one or more rare earth compounds;
one or more substantially insoluble inorganic extenders selected from the group consisting of a
neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; and
one or more binders;
wherein at least one of the one or more binders is an epoxy-based resin binder
and wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

135. (Previously Presented) The coating composition of claim 76 wherein the resin binder is an epoxy-based resin binder.

136. (Previously Presented) The coating composition of claim 84 wherein the resin binder is an epoxy-based resin binder.

137. (Previously Presented) The coating composition of claim 123 wherein the resin binder is an epoxy-based resin binder.

138. (Previously Presented) The coating composition of claim 89 further comprising one or more additives.

139-140. (Canceled)

141. (Previously Presented) The coating system of claim 134 wherein the system is a water-borne system, a solvent-borne system, a powder system or an appliqué system.

142. (Previously Presented) The coating system of claim 146 wherein the system is a water-borne system, a solvent-borne system, a powder system or an appliqué system.

143. (Previously Presented) The coating system of claim 83 wherein the system comprises a water-borne system, a solvent-borne system, a powder system or an appliqué system, wherein the coating system can be different for the coating composition and the one or more pretreatment coatings.

144. (Previously Presented) The coating system of claim 89 wherein the system comprises a water-borne system, a solvent-borne system, a powder system or an appliqué system, wherein the coating system can be different for the coating composition and the one or more pretreatment coatings.

145. (Currently Amended) A non-chromate containing coating system comprising:
a coating composition applied to a substrate, the composition including:
one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount;
one or more rare earth compounds;
one or more substantially insoluble inorganic extenders selected from the group consisting of a
neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; and
one or more binders;
wherein the substrate is aluminum, an aluminum alloy, magnesium or a magnesium alloy;

wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

146. (Currently Amended) A non-chromate containing coating system comprising:
one or more pretreatment coatings applied to a substrate to form a pretreated substrate;
and
a coating composition applied to the pretreated substrate, the composition including:
one or more corrosion-inhibiting carbon pigments in an effective corrosion-inhibiting amount;
one or more rare earth compounds;
one or more substantially insoluble inorganic extenders selected from the group consisting of a
neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; and
one or more binders;
wherein the substrate is aluminum, an aluminum alloy, magnesium or a magnesium alloy;

wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate.

147. (Previously Presented) The coating system of claim 134 wherein the coating composition is applied to the substrate by an electrolytic coating method.

148. (Previously Presented) The coating system of claim 146 wherein the coating composition is applied to the substrate by an electrolytic coating method.

149. (Previously Presented) The coating system of claim 83 wherein the coating composition, the one or more pretreatment coatings, or both are applied to the substrate by an electrolytic coating method.

150. (Previously Presented) The coating system of claim 89 wherein the coating composition, the one or more pretreatment coatings, or both are applied to the substrate by an electrolytic coating method.